

<i>Perca GIBBOSA</i> L., 1758.....	( <i>Lepomis</i> § <i>Eupomotis</i> )
<i>Labrus GRISEUS</i> L., 1758 .....	( <i>Lutjanus</i> )
<i>Chatodon CERULEUS</i> Bloch, 1790 (about).....	( <i>Acanthurus</i> )
<i>Labrus FULVUS</i> L., 1758.....	( <i>Epinephelus</i> § <i>Enneacentrus</i> )
<i>Labrus RUFUS</i> L., 1758.....	( <i>Bodianus</i> )
<i>Mugil CINEREUS</i> Walbaum, 1792 .....	( <i>Gerres</i> )
<i>Labrus RADIATUS</i> L., 1758.....	( <i>Platyglossus</i> )
<i>Cyprinus AMERICANUS</i> L., 1758 .....	( <i>Menticirrus</i> )
<i>Gasterosteus SALTATRIX</i> L., 1766 .....	( <i>Pomatomus</i> )
<i>Lachnolaimus SUILLUS</i> Cuvier, 1829.....	( <i>Lachnolaimus</i> )
<i>Sparus SYNAGRIS</i> L., 1758 .....	( <i>Lutjanus</i> )
<i>Muraena MORINGA</i> Cuvier, 1829 .....	( <i>Sidera</i> )
<i>Pleuronectes LUNATUS</i> L., 1758 .....	( <i>Platophrys</i> )
<i>Labrus CATESBEI</i> Lacépède, 1803 .....	( <i>Sparisoma</i> )

INDIANA UNIVERSITY, May 1, 1884.

A LIST OF FISHES COLLECTED IN THE EAST FORK OF WHITE RIVER, INDIANA, WITH DESCRIPTIONS OF TWO NEW SPECIES.

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The material on which the following list is based, was obtained by a day's seining with a fine-meshed net in the East Fork of White River, near Bedford, Lawrence County, Indiana, and by work in its tributary, Salt Creek, at various points, in Brown and Monroe Counties. White River is at that point a rather rapid, clear, shallow, stream, flowing over rock, gravel, and fine sand. Salt Creek is nearly everywhere sluggish, and flows between high steep clay banks.

The only list of the fishes of any Indiana stream which is even approximately complete, is that based on the collections of Professors Jordan and Copeland, in the West Fork of White River, at Indianapolis. Some differences will be noticed between that list and the present one, but these are possibly due to differences in the nature of the streams at the points examined.

1. *Noturus miurus* Jordan.

Exceedingly abundant in Salt Creek, where it was taken in great numbers at every haul of the seine. Also found in the channel of White River.

2. *Noturus flavus* Raf.

Almost equally common with the preceding

3. *Amiurus xanthocephalus* Raf.

Specimens of a small yellow cat-fish, apparently belonging to this species, were taken in Salt Creek, at Nashville, Brown County, Indiana.

The color is light bright yellow, with the membranes of the fins, especially the anal and caudal, blackish, thus contrasting strongly with the rays. Head rather narrow, its greatest width  $1\frac{2}{7}$  in its length; anterior

profile rising steeply to front of dorsal, without interruption at nape. Front of dorsal nearer adipose fin than snout. Maxillary barbel reaching beyond base of pectoral spine, the mental barbels to beyond margin of opercular membrane.

Head  $3\frac{1}{2}$  in length; depth  $3\frac{3}{4}$  to 4. A. 18 or 19, its base  $4\frac{3}{4}$  in length. Dorsal spine  $2\frac{1}{2}$  in head; pectoral spine  $2\frac{1}{4}$ . Eye  $7\frac{1}{2}$  in head. Interorbital: width slightly less than width of mouth, about  $1\frac{1}{2}$  head; length, 6 inches.

4. *Amiurus natalis* LeSueur.

Abundant in Salt Creek.

5. *Ictalurus punctatus* Raf.

Found in the open channel of White River; not seen by me in the smaller tributaries.

6. *Leptops olivaris* Raf.

Two young specimens from White River.

7. *Ictiobus carpio* Raf.

Common in White River.

8. *Catostomus teres* Mitch.

Abundant; especially in smaller tributaries.

9. *Catostomus nigricans* Raf.

Generally abundant.

10. *Erimyzon sucetta* Lac.

Found sparingly in Salt Creek.

11. *Moxostoma macrolepidotum* Les.

Found everywhere in large numbers.

12. *Moxostoma velatum* Cope.

White River.

13. *Campostoma anomalum* Raf.

Very common.

14. *Chrosomus erythrogaster* Raf.

Comparatively not abundant. Found in clear tributaries of Salt Creek.

15. *Pimephales notatus* Raf.

Very common.

16. *Hypargyrus*\* *tuditanus* Cope. (34979.)

*Hybopsis tuditanus* Cope., Trans. Am. Phil. Soc. 1866, 381.

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\**Hypargyrus*, gen. nov. Forbes MSS., type *Hybopsis tuditanus* Cope.

Body short and high, somewhat elevated but not closely compressed. Caudal peduncle deep, truncate behind, the fin conspicuously short and broad. Head heavy, blunt; snout short, bluntly decurved; mouth terminal, with short, slightly oblique gape; maxillary reaching vertical from posterior nostril, its length equaling that of eye. Eye moderate, about equaling length of snout, and interorbital width,  $3\frac{1}{2}$  in head (eye 3 in head in specimens of 2 inches and less). Teeth 4-4 with strong hook, and well-developed flattish grinding surface.

Scales rather small, smaller and more closely imbricated along anterior portion of lateral line; those in front of dorsal very small and much crowded (as in *Pimephales notatus*). Lateral line little decurved, rising anteriorly to shoulder.

Fins all small, the caudal especially short, less than length of head. First ray of dorsal ("rudimentary") simple and stiff, though distinctly articulated, and separated from the first branched ray by a membrane (as in *Pimephales*). Front of dorsal over or slightly behind insertion of ventrals; pectorals not reaching ventrals, the latter not to vent. Highest dorsal ray  $1\frac{2}{3}$  in head.

Head 4 to  $4\frac{1}{3}$  in length; depth 4 to  $4\frac{1}{4}$ . D. 8; A. 7. Lat. l.  $42\frac{2}{6}$ ; about 28 scales before dorsal fin.

Olivaceous above, the scales except at the base covered with black punctulations; no dark vertebral line. A narrow plumbeous band along middle of sides, conspicuous and black in the young, and always terminating in a very distinct small black spot on middle of caudal base; a black blotch on opercle. Fins translucent; dorsal with a conspicuous black blotch on middle of anterior rays and usually with a transverse series of small, black spots above this.

This species, which had not been seen since it was originally described, was found in large numbers in the White River near Bedford, Lawrence County, Indiana. It has also been found by Prof. S. A. Forbes in Illinois. Adult males have a few well-developed tubercles on the snout in the spring.

17. *Notropis*\* *stramineus* Cope.

A single specimen was found in White River.

18. *Notropis boops* sp. nov. (34982.)

Species with much the appearance of *Notropis rubellus*, but the body more elevated and compressed. Outline of back angulated at the front of dorsal, to which point the anterior profile rises in a straight line; caudal peduncle rather slender.

Premaxillaries anteriorly on a level with axis of body, which passes through the middle of the orbit. Snout short, not blunt. Mouth

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\* Under the earlier name, *Notropis*, I include the species referred to *Minnilus*, *Cliola*, and *Hemitremia* by Jordan & Gilbert, Synopsis Fish N. A., pp. 162-203.

terminal, very oblique, the upper jaw not projecting beyond the lower; Maxillary reaching vertical from front of orbit,  $3\frac{1}{2}$  in head. Eye extremely large, from  $2\frac{1}{2}$  (in specimens 2 in. long) to 3 (3 in. long) in head.

Teeth 1, 4-4, 1, with narrow, groove-like grinding surface, the inner edge of groove of the three largest teeth very strongly and coarsely crenate, the outer edge entire; tooth of inner row with well-marked grinding surface, but without crenations. The pharyngeal bones and teeth are slender and fragile.

Origin of dorsal fin directly over, or slightly in advance of, ventrals, a little nearer snout than base of median caudal rays. Highest dorsal ray  $\frac{1}{4}$  length of head; equal to distance between insertions of pectorals and ventrals. Caudal fin equaling length of head. Pectorals scarcely reaching ventrals; the latter about to vent. Dorsal and anal fins with outer margins strongly concave, owing to length of anterior rays.

Scales large, loosely imbricated as in *N. stramineus*; lateral line complete, quite strongly decurved anteriorly, 12 or 13 scales in front of dorsal fin.

Head  $3\frac{1}{2}$  in length; depth  $4\frac{1}{2}$  ( $4\frac{1}{2}$  in young). D. 8; A. 7. Lat. 1. 30.

Color olivaceous on back, sides & very, whitish below; scales of back narrowly and conspicuously margined with dusky; a very narrow, dark vertebral streak; head above with dusky areas. Middle of sides with a steel-colored streak formed by a band of coarse dark specks overlying the silvery; this band is continued forward across opercles and around front of snout. Fins unmarked; no dark points along base of anal.

This species is represented by 10 specimens from 2 to 3 inches long, taken at various points on Salt Creek, in Brown County, Indiana; and also by about 30 specimens taken by Mr. W. P. Shannon in Flat Rock Creek, Rush County, Indiana.

19. *Notropis analostanus* Grd.

Everywhere very abundant.

20. *Notropis cornutus* Mich.

Apparently much less abundant in the East Fork of White River than in the West Fork.

21. *Notropis diplexius* Raf.

Generally distributed.

22. *Notropis rubrifrons* Cope.

One specimen from White River.

23. *Ericymba buccata* Cope.

White River. Not seen in the tributaries.

24. *Rhinichthys atronasmus* Mitch.

Not often seen.

25. *Nocomis biguttatus* Kirt.

Occasional.

26. *Nocomis amblops* Raf.

Abundant.

27. *Nocomis hyostomus* sp. nov. (34950.)

Body very slender, terete, little compressed, not heavy forwards, regularly tapering from the shoulders. Caudal peduncle very slender. Head slender; snout long, conic, rather sharp,  $2\frac{3}{4}$  in length of head, projecting beyond mouth for a distance about equal to half its length from eye. Mouth inferior, horizontal, with short, wide gape, broad, rounded anteriorly; lips not thickened; maxillary extending slightly beyond vertical from front of eye,  $3\frac{2}{5}$  in head. Barbel long, conspicuous, thickened at base, its length about three-fifths diameter of eye. Eye small, in middle of length of head, very elliptical in shape, its vertical diameter equaling interorbital width and distance of nostril from tip of snout, 4 in head; longitudinal diameter of orbit  $3\frac{1}{3}$  in head. Opercle small, its length longitudinally less greatest width of cheeks.

Teeth 4-4, strongly hooked, without trace of grinding surface.

Dorsal and anal rather small, not falcate, the origin of dorsal very slightly behind insertion of ventrals, midway between snout and base of caudal. Pectorals large and prominent, the insertion more nearly horizontal than usual in the Cyprinidæ. Longest dorsal ray  $1\frac{1}{3}$  in head; pectorals  $1\frac{1}{4}$ ; caudal slightly less than head; ventrals reaching vent.

Scales large, 37 in lateral line, and 13 or 14 before dorsal. The scales are slightly crowded towards head, the series not converging towards back. Lateral line straight, or almost imperceptibly decurved anteriorly.

Head ( $3\frac{1}{2}$  to) 4 in length; depth  $5\frac{1}{3}$  to  $5\frac{3}{4}$ ; D. S. A. S. L. 2 to  $2\frac{1}{2}$  inches.

Color in life: Back light greenish, perfectly translucent; a silvery streak along lateral line with ill-defined edges, widest forwards; body below whitish. Scales above minutely and evenly dusted with dark points; top of head with black areas; middle of sides of head and body thickly covered with black specks, which do not form a distinct dark lateral streak, as in *N. amblops*. Fins translucent; base of dorsal somewhat dusky; black points at bases of anterior anal rays.

All specimens examined have back and sides with scattered black parasitic specks of varying size.

Very abundant in White River, near Bedford, Lawrence County, Indiana.

28. *Semotilus corporalis* Mitch.

29. *Notemigonus chrysoleucus* Mitch.

Occasional.

30. *Umbra limi* Kirt.

A single specimen taken at a sluggish point in Salt Creek.

31. *Esox vermiculatus* Le Sueur.

Found abundant in Salt Creek.

32. *Labidesthes sicculus* Cope.

Not abundant.

33. *Aphredoderus sayanus* Gilliams.

Five specimens of this species were taken on muddy bottom in Salt Creek, where it is probably locally abundant. In a specimen 3 inches long the vent is separated from the "knob" at the throat by a distance equal to diameter of orbit. In other specimens, 4 inches long, the vent is immediately behind the "knob."

34. *Pomoxys annularis* Raf.

Rather common in Salt Creek.

35. *Ambloplites rupestris* Raf.

Abundant.

36. *Lepomis cyanellus* Raf.

Found abundant in smaller creeks.

37. *Lepomis megalotis* Raf.

The most abundant sunfish, ascending all the small tributaries.

38. *Micropterus salmoides* Lac.39. *Ammocrypta pellucida* Baird.

Abundant on sandy shoals of White River. Not yet observed in the smaller tributaries.

40. *Boleosoma maculatum* Agassiz.

Everywhere very abundant. In all specimens examined from these waters the cheeks and breast are wholly naked.

41. *Diplesion blennioides* Raf.

Very common in White River and its larger tributaries.

42. *Percina caprodes* Raf.

Found in great numbers in Salt Creek. The nape is uniformly closely scaled in the many specimens examined.

**43. *Hadropterus phoxocephalus* Nelson.**

This beautiful species was found very abundant in White River. A single specimen was also taken in Salt Creek.

**44. *Hadropterus aspro* Cope & Jordan.**

Common in all larger streams.

**45. *Serraria*\* *sciera* Swain.**

The types of this species were taken in Bean Blossom Creek, a tributary of the West Fork of White River. A single specimen from Salt Creek, Brown County, Indiana, varies somewhat from the original in the following respects: Maxillary reaching vertical from eye, which equals length of snout. Preopercle with very well-marked denticulations, the teeth short but sharp. Snout  $4\frac{1}{2}$  in head. Space between dorsals much less than length of snout. Longest dorsal spine  $\frac{1}{2}$  head. Median line of belly with a distinct series of small spinous plates, beginning slightly in advance of vent, and not continuing quite to base of ventrals, the space on median line in front of this series naked. There seems to be no reason for doubting that these plates are deciduous. Entire region in front of pectoral fins covered with embedded scales, of which the median series alone is conspicuous; a small triangular area behind isthmus naked. Color much paler than in types; dusky olive, with about 8 vague dusky cross-blotches along middle of sides. Anal and soft dorsal dusky, with a translucent streak above their middle; spinous dorsal with some dusky blotching. Caudal obscurely barred. An enlarged, dark-edged humeral scale.

**46. *Etheostoma flabellare* Raf.**

Common in smaller tributaries.

**47. *Pœcilichthys cæruleus* Storer.**

Very abundant, especially frequenting rapids of small clear streams, where the finest specimens are always found.

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\**Serraria*, gen. nov. (type *Hadropterus scierus* Swain). This form seems worthy of generic separation from *Hadropterus*, with which it agrees in other respects, because of the wide union of the branchiostegal membranes across the isthmus, and especially the well-developed serration of the preopercle, which last character is not known to occur elsewhere among the *Etheostomatine*. The teeth are sharp and close set, and are developed on both vertical and horizontal limbs of the preopercle.